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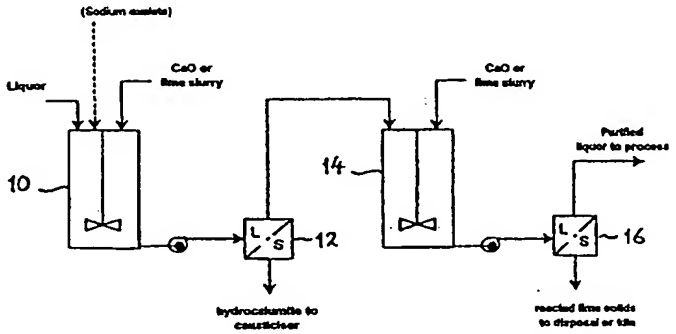
(54) Title: PROCESS FOR THE REMOVAL OF OXALATE AND/OR SULPHATE FROM BAYER LIQUORS



(57) Abstract

A process for the removal and causticisation of sodium oxalate and/or sodium sulphate from a Bayer process liquor containing sodium carbonate and one or both of sodium oxalate and sodium sulphate in an alumina refinery is described. The process is based on the observation that to efficiently causticise sodium oxalate solutions, it is first necessary to remove the aluminate ion from solution, optionally with recovery of the aluminate ion in some later step. This is effected by removing aluminate ions from the Bayer liquor through the formation of a carbonate–bearing hydrocalumite and/or sulphate–bearing hydrocalumite. The liquor may then be treated with sufficient lime to remove and causticise any residual carbonate ions and some or all of the oxalate ions present so that any reacted lime solids thus formed can be separated and safely disposed of. The process may include a pre–causticisation step in which the Bayer liquor is first causticised to reduce the concentration of carbonate ions, prior to the step of removing aluminate ions. The invention provides an effective process for the removal of sodium sulphate and a practical method for the recovery of soda from sodium sulphate. The efficiency of lime utilisation can also be dramatically increased from about 20 % to 80 % (if sulphate removal is not the objective) wherein alumina losses can be minimised. The oxalate concentration of the process liquor is also substantially lower than can usually be achieved in processes based on sodium oxalate–crystallisation.